

WHAT IS CLAIMED IS:

- 1 1. A system for controlling power distribution in an aircraft, comprising:
 - 2 a first interface;
 - 3 a plurality of nodes connected to the interface; each of said plurality of
 - 4 nodes monitoring and responding to commands received from the first interface;
 - 5 a communication network interconnecting each of the plurality of nodes
 - 6 and the first interface; and
 - 7 a second interface for receiving commands from an aircraft load
 - 8 management system.
- 1 2. The system of claim 1, further comprising:
 - 2 a control device operably coupled to the first interface; said control
 - 3 device providing a flight crew with control over the system;
 - 4 an in-flight control device having a touch screen; said device providing
 - 5 a passenger with control over multiple functions at each seat in the aircraft; and
 - 6 a computer device operably coupled to the first interface; said computer
 - 7 device providing maintenance of the system by way of software which reside on
 - 8 the computer.

- 1 3. The system of claim 1, further comprising:
- 2 external closures and external switches or relays which perform system
- 3 on/off functions when activated/deactivated by the flight crew.
- 1 4. The system of claim 3, wherein the external closures are programmed upon
- 2 installation of the system.
- 1 5. The system of claim 2, further comprising:
- 2 passenger seat controls.
- 1 6. The system of claim 5, wherein the in-flight control device activates various seat
- 2 motors, turns on/off at least one reading light, adjusts light intensity of the at least one reading
- 3 light, and turns on/off in-seat power ports.
- 1 7. The system of claim 5, wherein the passenger seat controls move various seat
- 2 motors, turn on/off at least one reading light, adjust light intensity of the at least one reading
- 3 light, turn on/off the in-flight entertainment system, and turn on/off in-seat power ports.
- 1 8. The system of claim 1, further comprising:
- 2 a gateway controller coupled to the first interface.

1 9. The system of claim 8, wherein the gateway controller is a removable.

1 10. The system of claim 1, wherein the communication network is a inter-node and
2 power communication network.

1 11. The system of claim 10, wherein the communication network is one of an Ethernet
2 network, a CAN bus and a Twisted wire differential serial bus.

1 12. The system of claim 1, wherein the second interface is an ARINC 429 data bus.

1 13. The system of claim 1, wherein each of the plurality of nodes comprises:

2 a communication transceiver and packet processor operable coupled to
3 the communication network; said communication transceiver performing at least
4 one of address recognition, error detection and correction, and buffering;

5 an input voltage module supplying power to a respective node;

6 a control processor; said processor receiving commands from the
7 communication network and broadcasting information to other nodes on the
8 network;

9 an analog to digital (A/D) convertor and multiplexor; said A/D
10 convertor and multiplexor monitoring inputs received by the multiplexer; and

1 a plurality of power supplies receiving and converting power from the
2 input power module.

1 14. The system of claim 13, wherein the inputs received by the multiplexer are currents
2 drawn by various motors in the aircraft, voltages and currents generated and drawn by power
3 supplies in the aircraft, current being drawn by the input voltage power module, and any
4 ground fault current drawn during a fault condition.

1 15. The system of claim 13, wherein the input voltage module operates at 115 VAC,
2 400 Hz.

1 16. The system of claim 13, wherein the plurality of power supplies comprise:
2 at least one DC-to-AC invertor;
3 at least one DC-to-DC power supply; and
4 at least one pulse width modulated control.

1 17. The system of claim 13, further comprising:
2 passenger controls and indicator; said controls and indicators permitting
3 a passenger to control seat motors, activation and deactivation of the in-flight
4 entertainment system.

1 18. The system of claim 13, further comprising:
2 solid state relays; and
3 seat motor controllers coupled to the relays.

1 19. The system of claim 18, wherein the seat motor controllers generate direction and
2 start/stop information for seat motors seats in the aircraft.

1 20. The system of claim 19, wherein the seat motor controller is implemented by way
2 of one of programmable or discrete logic, and at least one microprocessor and digital signal
3 processor.

1 21. The system of claim 18, wherein outputs from the motor controllers control at least
2 one of solid state and electro-mechanical relays and solid state “H bridge” devices.

1 22. The system of claim 20, wherein the solid state relays and “H bridges” are one of
2 discrete electronic devices, or integrated solid state relays.